

PP-56

Application Of Activated Carbon In Wastewater Treatment: A Review

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Activated carbon, more popularly known as activated charcoal is a form of carbon that is processed either chemically or physically to form small low volume pores to increase the total surface area. Increase in total surface area plays a key role to improve the adsorption capacity of the carbon. One-gram activated carbon contains approximately 3000m² of total surface area as determined by gas adsorption which is the main cause of its high microporosity. The method of activation involves both physical and chemical treatment. The physical method involves carbonisation and oxidation, whereas chemical method involves impregnation of the carbon with certain chemicals. In both cases, the primary objective is to enhance the efficiency of the provided carbon material. Activated carbon is broadly classified according to their particle size, porosity, and source. Mostly used source is biological waste such as rice husk, sugarcane bagasse etc. The level of activation primarily depends on the extent of surface area created by the physical or chemical treatment method. Activated carbon is usually obtained from charcoal, yet when it is derived from coal it is referred to as activated coal. Charcoal has been an age-old material which has multiple uses. However, activated charcoal is primarily used in wastewater treatments. Activated carbon has good capacity to remove dyes, fluoride, and heavy metals from industrial sewage. On the other hand, activated carbon is widely used in personal care products like soap, face wash, teeth whiteners etc.